

LA PSICOLOGÍA DE HOY

**PERSONAL SELF-REGULATION, ACADEMIC ACHIEVEMENT, AND SATISFACTION
OF LEARNING (PRODUCT)****Jesús de la Fuente**

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Introduction. Every teaching-learning process aims toward a certain product, which is based on certain objectives and purposes that are to result in the student learning a specific subject matter. This product is called academic performance. Performance has been defined and categorized by different authors. Most research has analyzed performance based on a single global qualification. This tendency to reduce the outcome of learning to a single grade has become one of the main criticisms of research on academic performance. This variable has taken on greater importance in educational research in recent decades, with many variables being studied for their influence on the academic performance of university students. Some of these variables are approaches to learning, self-regulated learning, student attitudes, coping strategies and so on.

Method. A total of 1101 students participated in the study (university and candidate students). The analyses made to meet the proposed objectives and test hypotheses were: Association analysis through Pearson bivariate correlations (*Association objectives and hypotheses*); linear regression analysis (*Regression objectives and hypotheses*); Cluster analysis, ANOVAS and MANOVAS, with Scheffé post hoc, and effect size estimates (*Inferential objectives and hypotheses*).

Results. A significant associative relationship appeared between self-regulation and satisfaction with learning and performance. In complementary fashion, the level of personal self-regulation had a significant main effect on a high level of satisfaction with learning, specifically in the satisfaction with learning factor and in thoughtful learning, and by high levels of procedural and attitudinal performance.

Discussion and Conclusions. The importance of personal self-regulation that determines the degree of cognitive self-regulation during the process of university learning; the relationship between personal self-regulation and the type and quantity of satisfaction with learning, and academic performance.

Palabras Clave: Personal self-regulation, satisfaction with learning, academic performance, teaching-learning process

1. INTRODUCTION

University education is undergoing a profound process of change, and the main exponent of this change is the European Higher Education Area (EHEA). The sweeping innovations driven by the creation of the EHEA have brought about new demands for both teachers and students, many of which are the product of a restructuring of the teaching-learning process (Biggs, 2001; Elliot & Dweck, 2007; Entwistle & Peterson, 2004). In this process, students take on a more active role in constructing their own learning, and teachers must contribute to the construction of their learning by advising, orienting and helping them resolve difficulties that arise along the way (De la Fuente & Justicia, 2007).

Personal self-regulation as a presage variable

Personal self-regulation refers to the capacity or ability to control our own thoughts, emotions and actions. Through self-regulation we are able to consciously control the amount that we eat, whether to act on an impulse, our task execution, obsessive thoughts, and even the extent that we allow ourselves to listen to our own emotions. We can therefore affirm that personal self-regulation is a vital process that allows people to behave adequately, carry out tasks properly, and abstain from activities that may be harmful to their own livelihood (Baumeister & Heatherton, 1996; Baumeister et al., 1994). Self-regulation is used in a number of processes including the regulation of emotions, thoughts and actions for physical or behavioral control or restraint (Baumeister, Bratslavsky, Muraven, & Tice, 1998; Vohs et al., 2008).

Within Miller and Brown's theoretical model for addictive behaviors (Miller & Brown, 1991), it is assumed that self-regulation is developed through seven successive processes: 1) *Informational input* (self-observation) is the first process that occurs in self-regulation, where persons obtain information about their own behavior, especially about a potentially problematic behavior. In this process, persons increase their understanding of the nature and impact of the behavior to be changed; 2) In *Self-evaluation*, one looks for consistency between expected performance and actual performance, and this includes becoming aware of the negative consequences of a behavior. In other words, this process is produced when a person becomes aware that a behavior may be problematic. The observed behavior is compared to some personal criterion, which may be: 1) internal, where the actual behavior is compared to the ideal; or 2) external, comparing the behavior to social norms. If one discovers that the behavior does not meet a certain standard or norm, a negative feeling may result. When these reactions (whether cognitive, affective or behavioral) are sufficiently strong, they may lead us to the next process; 3) *Instigation to change* is triggered by perceptions of discrepancy and dissatisfaction in the above evaluation. According to this model, this impetus from discrepancies is essential for advancement to further stages of self-regulation (Brown, 1998); 4) *Searching for options* to reduce discrepancies that have been detected above; 5) *Formulating a plan*, where one sets down a schedule, activities to be pursued, places and any other aspects to be considered in the attainment of one's goals; 6) *Implementing the plan*, the stage where one executes all that was planned in the prior phase; 7) The final phase is addressed through a *comprehensive assessment*, addressing both the effectiveness of one's planning and the attainment of goals.

If there is a deficit in any of these self-regulation processes, one's behavior regulation will suffer. Within this theoretical framework, Brown (1998) defines self-regulation as a person's ability to "plan, monitor and direct his or her behavior in changing situations" (p.62). In essence, this model adopts the self-regulation postulates of Zimmerman (2002), by defining moments of planning, control and thoughtful evaluation of one's action.

Brown, Miller and Lawendowski (1999) constructed the Self-Regulation Questionnaire (SRQ) to measure self-regulation based on their theoretical model. Later, after performing further analyses, they developed an abbreviated version, the *Short Self-Regulation Questionnaire* (SSRQ), which was validated in a Spanish sample by Pichardo, Justicia, Berbén, De la Fuente & Martínez-Vicente (in review). The data show good fit to the structure of seventeen items grouped under four factors (goal setting-planning, perseverance, decision making and learning from mistakes). These factors are adopted in the present paper, which establishes the moments at which each phase takes place. This instrument has been used mainly in connection with substance abuse, and has been submitted to an examination of its psychometric characteristics on several occasions (Carey, Neal & Colling, 2004; Neal & Carey, 2005). Its use has also been extended beyond substance abuse to address aspects such as psychological well-being, disposition to happiness, (Okum, Levy, Karoly & Ruleman, 2009), depression symptoms (Kogan & Brody, 2010) and career adaptability (Creed, Fallon & Hood, 2009), and is in demand in other areas such as education (De la Fuente, Peralta, Sánchez, 2009).

Personal self-regulation, as a psychological variable that is closely tied to subjects' personal development competencies, has attracted interest in the sphere of educational psychology. Prior studies have shown that self-regulation has a significant role in health as well as in success, whether academic or work-related (Karoly, Boekaerts & Maes, 2005; Vancouver & Scherbaum, 2008). We can think of the process of self-regulation as having a personal, behavioral and contextual nature (Torrano & González, 2004), adding goals as a key factor (Latham & Locke, 2007; Winne, 2004). Taking personal regulation as a presage variable in the sphere of educational psychology, De la Fuente and Cardelle-Elawar (2011, p. 3) define it as a student variable "that determines the level of effort that students will sustain in the process of active learning for the completion of a given task". It is widely recognized as the means by which students transform their mental skills into problem solving survival skills (De la Fuente & Cardelle-Elawar, 2011).

Academic Performance as a product variable

Every teaching-learning process aims toward a certain product, which is based on certain objectives and purposes that are to in the student learning a specific subject matter. This product is called *academic performance*. Performance has been defined and categorized by different authors. Most research has analyzed performance based on a single global qualification. This tendency to reduce the outcome of learning to a single grade has become one of the main criticisms of research on academic performance. Biggs (2001) proposes an alternative to address the problem of reducing academic performance, describing the product of teaching-learning through different outcomes classified according to their nature: quantitative, qualitative and affective (satisfaction). Affective performance has been studied the least, but Locke (1976) proposed a rather widely accepted definition. According to this author, satisfaction is a pleasurable emotional state that results from the perception that certain activities are making it possible to attain values important to the student, inasmuch as these are consistent with his or her needs.

We have seen that the proposal from Biggs is not the only way to rectify the simplistic view of academic performance. De la Fuente and colleagues (De la Fuente, Justicia, Trianes & Casanova, 2005) base academic performance on a compendium of competencies: conceptual (grades achieved on exams), procedural (class attendance and lab work) and attitudinal (class participation and vol-

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untary efforts). This new conception of academic performance corresponds to the needs of the new European Higher Education Area.

Academic performance has taken on greater importance in educational research in recent decades, with many variables being studied for their influence on the academic performance of university students. Some of these variables are approaches to learning, self-regulated learning, student attitudes, coping strategies and so on.

2. OBJECTIVES AND HYPOTHESIS

The present investigation seeks to determine what relationships there may be between personal self-regulation (as a *presage variable of learning*) relates to satisfaction with learning and academic performance (as *product variables of learning*). It was hypothesized that, there would be a significant, positive association between personal self-regulation with satisfaction with learning and academic performance. Likewise, an interdependence relationship between personal self-regulation and the two different constructs was expected to appear.

3. MATERIALS AND METHODS

Participants

A total of 1101 students participated in the study, students at the University of Almería (Spain) and students who were preparing for competitive exams. Of the university students were pursuing a degree in Psychology, and School Psychology (*psicopedagogía*). The mean age was 23.08 years (SD=4.4).

Instruments

Satisfaction with learning process was assessed using the IATLP Scales (De la Fuente & Martínez, 2004, 2007), specifically the revalidated version of this scale (De la Fuente, et al, 2012). Overall reliability for this scale is $\alpha=0.75$ (acceptable). The scale consists of two factors: Satisfaction with learning and Thoughtful learning. The reliability of this scale (IATLP-8) is 0.92. You can see the IATLP-8.

For *academic performance*, we made use of the *academic-professional competencies assessment model* (De la Fuente, Justicia, Casanova & Trianes, 2004). The competencies that enable us to practice a profession are defined as the body of integrated academic-professional knowledge for optimum fulfillment of professional requirements (De la Fuente, 2003a, 2003b, in press). The theoretical model assumes the following principles:

Academic and professional knowledge are necessary for excellent professional practice. Such knowledge requires conscientious, self-regulated work on the part of the subject, so that he or she can build an integrated understanding of the two types of knowledge.

The lack of integrating both types of knowledge brings about a competency bias that hinders optimum performance in the professional context, since there is an epistemological and practical disconnect between factual, procedural and attitudinal competencies acquired in the academic and professional contexts. For this reason we underscore the importance of one's personal, integrated reconstruction of the knowledge.

Solving problems and addressing situations in professional practice involve the combined use of academic-professional competencies. Both types of competencies include knowledge (conceptual subcompetencies), skills (procedural subcompetencies) and attitudes (attitudinal subcompetencies).

Following this competency model, we took the mean scores that teachers assigned to the students at the end of a full-year subject. Total performance, on a scale of 1 to 10, is the final grade

given to the student for this subject. The 10 points are a compendium of results obtained on the three levels of subcompetencies, conceptual, procedural and attitudinal:

Conceptual scores: includes all scores obtained on exams covering the conceptual content of the subject (4 points).

Procedural scores: assessed from the student's practical work covering procedural content and skills (4 points).

Attitudinal scores: scores given for class participation and for optional assignments undertaken for a better understanding of the material (2 points).

In order to carry out the different analyses and compare the results, the different subcompetency scores were converted to an equivalent scale of 1 to 10.

Procedure

Information from self-reports was collected in the classroom during regular class from both university students and competitive examination candidates. For the university students, data on *Presage* variables (personal self-regulation, sex, age) was collected during the month of October. Later, in the month of February, students completed the scales measuring *Process* variables (learning approaches, coping strategies, self-regulated learning and regulatory teaching). In the month of May-June, satisfaction with learning was assessed, and teachers of the participating classes were asked for the mean total scores for each student, as measured through continuous assessment over the academic year (*Product* variables). Competitive examination candidates, on the other hand, completed the different questionnaires during their preparatory course. Candidates provided data on *Presage* variables (personal self-regulation, sex and age) in October, and, depending on time availability, they completed the questionnaire pertaining to the *Process* variables (coping strategies) at some time during the course.

Design and Data Analyses

The nature of this investigation, in addressing its objectives and hypotheses, constitutes a non-experimental ex post-facto design. In terms of data collection, it is a survey investigation using self-reports (questionnaires and scales) and a cross-sectional strategy.

Association analysis through Pearson bivariate correlations and linear regression for Association objectives and hypotheses; and cluster analysis, ANOVAS and MANOVAS (with Scheffé post hoc, and effect size estimates) for inferential objectives and hypotheses. Analyses were carried out to meet the proposed objectives and test hypotheses using SPSS version 21.00 for Windows.

4. RESULTS

Pearson correlation analyses showed that total self-regulation as well as *goals* and *perseverance* are positively, significantly related to *satisfaction with the learning process* and its two factors (*meaningful learning* and *satisfaction with learning*). The data are shown in Table 1.

Table 1
Correlations between personal self-regulation and satisfaction with the learning process (n=111)

Dimension and factors	SHORT SRQ	Personal Goals	Perseverance	Decision Making	Learning from mistakes
D3. Satisfaction with learning	.282**	.382**	.271**	.072	.212*
F10. Meaningful learning	.306**	.416**	.262*	.144	.200*
F3. Satisfaction with learning	.201*	.315**	.210*	-.016	.157

Note. * $p < .05$; ** $p < .01$

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Personal self-regulation correlated with *total performance*. Positive relationships were also found for *goals* and *perseverance* in connection with *procedural* and *attitudinal performance*, while a weaker relationship was found with *learning from mistakes* (Table 2).

Table 2
Correlations between personal self-regulation and performance (n=154)

Factors	SHORT SRQ	Personal Goals	Perseverance	Decision Making	Learning from mistakes
Conceptual Performance	.105	.173*	.138	.065	-.011
Procedural Performance	.239**	.215**	.295**	.085	.181*
Attitudinal Performance	.267**	.312**	.323**	.061	.176*
Total Performance	.207*	.249**	.286**	.014	.133

Note. * $p < .05$, ** $p < .01$

The MANOVA between the low, medium, high groups in *personal self-regulation* and *satisfaction with learning (factors)* showed a significant partial effect of self-regulation on: *satisfaction with learning*, $F(2, 93)=4,651$ (Pillai's trace), $p < .05$, $\eta^2=.091$, with a post-hoc effect 1<3 ($p < .05$); and *meaningful learning* $F(2, 93)=4,465$ (Pillai's trace), $p < .05$, $\eta^2=.088$, with a post-hoc effect 2<3 ($p < .05$). See Table 3.

Table 3
MANOVA between the personal self-regulation groups and the factors of satisfaction with learning (n=96)

Personal Self-Regulation	Satisfaction with learning	Meaningful learning
Level 1. Low (n= 30)	3.67 (.56)	3.80 (.73)
Level 2. Medium (n= 38)	3.77 (.60)	3.63 (.68)
Level 3. High (n= 25)	4.11 (.61)	4.22 (.65)
Total (n= 96)	3.84 (.61)	3.89 (.72)

The ANOVA between IV *personal self-regulation* (groups of low, medium, high) and DV *total performance* presented a significant main effect $F(2,149)=3,551$ (Pillai's trace), $p < .05$, $\eta^2=.045$, with a post-hoc effect 1<3 ($p < .05$). See Table 4.

Table 4
ANOVA between the personal self-regulation groups and total performance (n=152)

Personal Self-Regulation	Total Performance
Level 1. Low (n= 42)	7.27 (1.22)
Level 2. Medium (n= 69)	7.45 (.97)
Level 3. High (n= 41)	7.91 (1.32)
Total (n= 152)	7.53 (1.16)

The MANOVA between IV *personal self-regulation* (groups of low, medium, high) and DV *types of performance*, presented a significant main effect $F(6,288)=3,115$ (Pillai's trace), $p < .01$, $\eta^2=.061$.

The MANOVA between the groups of low, medium, high in *personal self-regulation* and *type of academic performance (factors)* showed a significant partial effect of *self-regulation* on: *procedural performance*, $F(2, 145)=3,783$ (Pillai's trace), $p<.05$, $\eta^2=.050$, with a post-hoc effect $2<3$ ($p<.05$); and *attitudinal performance*, $F(2, 145)=7,328$ (Pillai's trace), $p<.001$, $\eta^2=.092$, with a post-hoc effect $1<3$ ($p<.01$) and $2<3$ ($p<.01$). See Table 5.

Table 5
MANOVA between the personal self-regulation groups and types of performance (n=148)

Personal Self-Regulation	Conceptual Performance	Procedural Performance	Attitudinal Performance
Level 1. Low (n= 41)	7.51 (.98)	8.41 (1.26)	5.22 (1.86)
Level 2. Medium (n=68)	7.57 (1.03)	8.47 (1.18)	5.46 (1.99)
Level 3. High (n= 39)	7.97 (.97)	9.03 (.93)	6.76 (2.02)
Total (n= 148)	7.66 (1.01)	8.60 (1.17)	5.74 (2.05)

5. DISCUSSION AND CONCLUSIONS

Results show a significant, positive relationship between personal self-regulation and satisfaction with learning and performance. In complementary fashion, the level of personal self-regulation had a significant main effect on a high level of satisfaction with learning, specifically in the satisfaction with learning factor and in thoughtful learning, and by high levels of procedural and attitudinal performance.

With reference to satisfaction with learning, personal self-regulation (total, goals, perseverance and learning from mistakes) is associated with satisfaction with the learning process. As for performance, students with goals and perseverance obtain better total, procedural and attitudinal performance. This result is consistent with the premise that procedural and attitudinal performance have the greatest association with self-regulation, while learning approach is more associated with conceptual performance (De la Fuente, Pichardo, Justicia & Berbén, 2008). Again, we stress the need for more studies in this direction, due to the association of personal self-regulation with the process variables (learning approaches, coping strategies and self-regulated learning in university students) and product variables (satisfaction with learning and performance). Personal self-regulation (presage variable) contributes significantly toward explaining product variables to a greater or lesser extent (satisfaction with learning and academic performance, especially procedural and attitudinal).

Limitations and prospects

This investigation has some limitations, which should be avoided in future studies. The first limitation is due to the lack of other research results of a comparable nature, referring to our core study variables like personal self-regulation. For this reason, the results obtained here are still tentative; the nascent treatise of this investigation leads us to be cautious in accepting conclusions with these variables. Another limitation has to do with *sample attrition* in some of the analyses, since not all the students completed all of the questionnaires and all the variables like sex, for this reason there was sample loss in some analyses. Future investigations should insist on the importance of completing this data point.

We must insist on the possible utility of the findings obtained in this research for educational practice, and stress certain general ideas that would serve for continuing this line of research. First, training self-regulation and coping behaviors can equip students with the needed skills that are com-

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mon to both self-regulated learning and to self-regulating addictive behaviors, which affect not only the student's health but also his or her academic performance. Secondly, to promote and provide favorable conditions for quality teaching-learning environments that encourage deep learning.

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